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THE IMPACT OF INFORMATION TECHNOLOGY ON THE PERFORMANCE OF BANKS IN PUNE CITY: A COMPARATIVE STUDY

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ABSTRACT

Advent of ICT has brought transformational changes in the Indian Banking Industry. Liberalisation, privatization and globalization policy and the recommendations of various committees paves the way for use of ICT in the Indian Banking sector. ICT has made the banking more easy, convenient and user friendly. It has changed the way the banks provide the services to their customers. It has also impacted the performance of the banks in all respects. The present study is modest attempt to study the impact of IT on the performance of banks operating in Pune City. The researcher has selected 5 branches each of 2 Public Sector Banks, 2 Private Sector Banks, and 2 Co-operative Sector Banks operating in Pune City and the impact of information technology on core operational areas as well as secondary operational areas. Total sample size is 1950 which includes bank customers, employees and managers/officers. The study reveals that the private banks lag behind in several aspects as compared to the nationalized and cooperative banks and there is a lot of improvement required in several areas. One cannot clearly distinguish the nationalized banks as the best performers or the cooperative banks is the best performers because there are issues that need to be taken care of in nationalized and cooperative banks also. What the study would conclude is that, for a bank to be successful there should be a proper commitment of the top-level management and at the same time the IT staff who takes care of the hardware and software infrastructure within the bank must work in harmony with the banking staff.

KEY WORDS: ***Information Technology, E-banking, online banking, e-banking service quality, customer satisfaction, CRM***

INTRODUCTION

The last decade has witnessed a drastic change in the economic and banking environment all over the world. Since the early 1990s, several financial and economic sector reforms were announced in India. This caused the very operational environment for the banks in the cooperative and the nationalized sector to go through a huge amount of transformation. An efficient and a very competitive system of banking developed only because of the different measures the Indian government took to bring about deregulation and introduce new reforms on the concerned sector.

During the same time, due to liberalization there were several new players who forced the banks to enter into fierce competition as far as client acquisition was concerned. To gain a competitive advantage banks looked upon the different possibilities that information and communication technology could contribute in getting them this competitive advantage. Information and communication technologies were the only way which could increase the chances of the banks to acquire exponential growth and gain higher profits. The Indian banks learnt that their survival and success totally depend upon the efficient use of the information and communication technology (Mishra, S. 2012)[2]. Banks became more customer focused and started acquiring all the different technologies that would enable them to serve the customers in a better way.

RBI also contributes to a great extent by making sure that rules and guidelines which have been specified from time to time are relentlessly followed by the Indian banks. This has resulted in a better operational efficiency and has reduced the risks involved in banking. Several measures that have been taken by the RBI have also resulted into a better quality of services that are provided today by the Indian banks to the various customers. RBI lays down rules on electronic banking, for banking, payment systems and various other aspects that are critical to satisfy the customers.

EVOLUTION OF IT USAGE IN BANKING INDUSTRY

Indian banking sector adopted ICT in their routine operations basically due to the compulsion and necessity to meet the demand of their customers.

Following reasons made Indian banks to use IT in their operations:

- Increasing number of bank branches,
- Growing volume of banking operations,
- Problems in manual system and
- Increasing incidences of frauds etc.

Committees headed by C. Rangarajan have given landmark reports making strong recommendations regarding the use of IT applications in banking business. In 1993, an agreement was signed between bank employees and management regarding computerization of banking industry in India.

In 1994, Reserve Bank of India (RBI) constituted a committee for technical up gradation of the banks. The Committee comprised of the representatives of different members from banks, technical institutions and government. Based on the recommendations of this Committee, The Institute for Development and Research in Banking Technology (IDRBT) was established in the year 1996. (Bolda & Verma, 2006)[39]. The IDRBT conducts the research on various technological aspects of banking industry such as, financial network, application architecture, web based technology, payment system, multi-media, data mining, data warehousing and risk management.

In the year 1999, IDRBT and RBI, jointly developed a satellite based wide area network known as Indian Financial Network (INFINET). Only the banks and financial institutions can use the network. Presently, the network consists of more than 950 Very Small Aperture Terminal (VSATs) located in 127 cities of the country. (Gulati et.al. 2002)[40]

Efficient payment system is highly important in the any banking system. Realizing this fact, RBI constituted an operational group and payment system advisory committee in the year 2000. The Committee was given an important task to develop an efficient and well-integrated system which could serve the purpose of Real Time Gross Settlement (RTGS).

RECENT IT APPLICATIONS IN BANKING SECTOR

Information Technology plays an important role in promoting the growth and development of economy. Globalization and liberalization compelled the Indian banking sector to adopt IT in their operations. E-banking is getting momentum in India. Banks are excessively spending on their communications infrastructure to obtain a competitive edge from E-Banking.

SOME OF THE RECENT IT APPLICATIONS IN BANKING SECTOR IN INDIA ARE AS FOLLOWS: (KANNABIRAN, G., & NARAYAN, P. C. 2005)[41]

- Electronic Clearing and Settlement System
- Debit and Credit Clearing System
- Real Time Gross Settlement (RTGS)
- Society for Worldwide Inter-bank Financial Telecommunications (SWIFT)
- Automated Teller Machine (ATM)
- Tele Banking
- Phone Banking and Mobile Banking
- Core Banking
- SMS Banking
- Point of Sale (POS)
- Banking KIOSK

ADVENT OF FINTECH ECOSYSTEM IN INDIAN BANKING SECTOR

In recent years, the phrase 'FinTech' has become a buzzword in the Indian financial services sector. FinTech are the technology based companies. They enable and collaborate with financial institutions and banks to make existing banking and financial system more effective and efficient through their expertise, experience, advanced technology etc.

The FinTech ecosystem has brought about tremendous changes in the Indian banking sector and hence it has become a top priority for all banks to integrate with this system. (Jutla, S., & Sundararajan, N. 2016)[42]. **E-Wallets/**

M-wallets: Now-a-days people, especially youths have started using E-Wallets to carry their transactions. These E-wallets hold money in digital format. These e-wallets have brought about notable changes in the mode of transactions being carried out in the country.

STATEMENT OF PROBLEM

With this background of a banking, review of literature and introduction of information technology in banking sector, researcher is interested to study whether there is improvement in the banking business with the help of information technology and how the changes are taking place in the banking business, because IT has brought revolution in the operational areas which have great influence on the efficiency and effectiveness of the banks **especially the changes took place in the core as well as secondary operational areas of banking sector.**

Hence, researcher decided to undertake the study titled as, "IMPACT OF INFORMATION TECHNOLOGY ON THE PERFORMANCE OF BANKS IN PUNE CITY: A COMPARATIVE STUDY".

OBJECTIVES OF THE STUDY

1. To assess the impact of Information Technology on the marketing, service quality, Customer Relationship Management, Customer Satisfaction, efficiency and overall performance of the Public Sector, Private Sector and Co-operative Sector Banks.
2. To study the opinions of the bank officials and customers regarding Information Technology used in the routine activities of the banks.
3. To study the problems of Information Technology used in banks.
4. To make comparative analysis of Public Sector, Private Sector and Co-operative Sector Banks in Pune city in terms of effectiveness of Information Technology used by them.

HYPOTHESES OF THE STUDY

1. The overall performance and efficiency of Public Sector, Private Sector and Co-operative Sector Banks is largely dependent on the use of Information Technology in their routine operations.
2. Information Technology improves the customer satisfaction of Public Sector, Private Sector and Co-operative Sector Banks.
3. Customer Relationship Management of Public Sector, Private Sector and Co-operative Sector Banks has improved after the implementation of IT.
4. Information Technology improves the service quality of Public Sector, Private Sector and Co-operative Sector Banks.

SCOPE OF THE STUDY

The scope of the study is restricted to Pune city i.e. the geographical area of Pune city and with the banks restricted to 5 branches each of 2 Public Sector Banks, 2 Private Sector Banks, and 2 Co-operative Sector Banks.

For the present study the researcher has used various statistical tools such as tables, graphs and hypotheses are tested by using Independent Samples T Test and Chi Square Test.

RESEARCH DESIGN

Methodology adopted for the study

SELECTION OF A SAMPLE SIZE

1. **Selection of a Study Unit: Pune City**
2. **Selection of a sample unit: Banks**

The researcher has selected 5 branches each of 2 Public Sector Banks, 2 Private Sector Banks, and 2 Co-operative Sector Banks operating in Pune City (population size is stated in the next paragraph) and the impact of information technology on the performance of banks.

3. **Sampling Plan**

A. Universe/Population:

There are total 19 Private Sector Banks, 26 Public Sector Banks and 69 Co-operative Banks operating and providing banking services in Pune city.

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Table 1.3: Universe / population

Bank Type	Total No. of Banks operational in Pune City	Total No. of branches in Pune city
Public Sector Banks	26	472
Private Sector Banks	19	127
Co-operative Banks	69	198
Total	**114**	**797**

Source: www.rbi.org

By taking the base of above table i.e. entire banking business of Public sector banks, Private sector banks and Co-operative sector banks spread over in the Pune city **(114 banks with the help of 797 branches)** operating their banking activities throughout the Pune city, the researcher has selected the following sample from the above stated banks i.e. total universe population of banks in Pune city as a convenient sampling.

After selecting the number of banks and branches of the banks, the researcher has decided to select the bank officers, bank employees and customers of the banking business **as respondents as per the convenience i.e. Convenient Sampling.**

Table 1.1 Sample Size

Sr. No.	Name of the bank	No. of Branches	Bank Managers/Officers	Bank Employees	Bank Customers
	A. Public Sector Banks				
1	Bank of Maharashtra	5	25	50	250
2	Bank of India	5	25	50	250
	B. Private Sector Bank				
3	ICICI Bank Ltd.	5	25	50	250
4	HDFC Bank Ltd.	5	25	50	250
	C. Co-operative Sector Banks				
5	The Cosmos Co-operative Bank Ltd., Pune	5	25	50	250
6	Saraswat Co-operative Bank Ltd., Pune	5	25	50	250
	Total	**30**	**150**	**300**	**1500**

Source: Field Work

DATA COLLECTION

A. Primary Data: Primary Data has been collected from the respondents stated above with the help of well-structured interview schedule designed separately containing the impact of IT on overall performance of the bank from the different respondents such as bank managers/officers, bank employees, and bank customers.

B. Secondary Data: The secondary data has been collected through the publications of RBI, Secretariats /Departments of the Government of India as well as state governments, Annual Reports of respective sample banks, journals, periodicals, books, websites, report of various banks and financial institutes and news in the newspapers regarding IT and Banking sector, proceedings published in the different conferences, seminars, workshops on various banking issues .

Research Design: Present study is 'Descriptive' as well as 'Analytical'

A. Data Processing:

The entire primary and secondary data has been processed with the help of different statistical processing tools such as tabulation, percentages, graphs and different statistical tests as per the requirements of the data processing.

B. Nature of the study: This research is quantitative and qualitative in nature.

C. Research Techniques: Survey Method.

D. Contact Method: Personal Interviews of Bank branch Managers/officers, bank employees, and bank customers of the banks.

LIMITATIONS OF THE STUDY

The present research has the following limitations:

1. The customers of only six banks (Two banks each from Public Sector, Private Sector and Co-operative Sector) were selected for the present study. As a result, the generalization of the findings of the present research study should be considered carefully. Furthermore, the sample was restricted to Public Sector, Private Sector and Co-operative Sector banks only. The other major banks like foreign banks are also offering electronic banking services to their customers.
2. The analysis of e-banking services is based upon retail banking services only. Services of corporate e-banking have not been analyzed in the present study.
3. The responses for the study have been taken from the Pune City of Maharashtra State only. The expectations and opinions of the customers in Pune City may vary from those of the rest of India.
4. The present study is related to those bank customers who are using e-banking services. Hence, it was difficult to approach and get the information from those customers who are busy and hardly visit the banks for their transactions/complains.
5. It was very difficult in obtaining the permissions to collect the data from bank managers, employees and customers.

   It was difficult to get the required data from managers and employees of the banks due to their busy schedule.

Note on Pilot Study

While formulating the questionnaire, several challenges were faced. After the first draft of the questionnaire was developed, a pilot study was conducted for 50 customers, 20 employees and five managers. The respondents were randomly chosen from the five banks under study. The sole purpose of the pilot study was to find out whether the questionnaire had any flaws while being executed. There were a few corrections that are required to be made in the questionnaire for customers and managers. It was made sure that no stone is left unturned in gathering the true and fair opinion of each of the respondents under the study.

REVIEW OF LITERATURE

1. H. K. Singh, Amar Tigga (2012)[1], have studies the e-banking services provided by the banks, legal aspects in e-banking and the effects of e-banking on the operational areas of banks. The study analyses that the individuals, merchants and traders, banks and the country are being benefited due to the transformation in the banking industry and IT enabled services provided by the banks.
2. Bindiya Tater, Manish Tanwar and NavaratanBothra (2011)[2], the study assesses the impact of Information Technology on the banking industry. It also explains the recent trends of IT in banking industry such as networking of branches, integrated treasury management system, emphasis on technology based liquidity management system and CBS implementation.
3. Dr. Amit Chakrapani (2013)[4] has done comparative analysis of public sector, private sector and foreign banks operating in India which are using technology for effective CRM. The study reveals that foreign banks and Private Banks put more emphasis on the use of IT for CRM. Public sector banks are lagging in the same.
4. Pooja Malhotra and Balwinder Singh (2009)[5] explain the present position of internet banking in India and its implications for the Indian banking industry. The study analyzed the impact of e- banking on the performance and risk of the banks. The analysis indicates that the banks using internet are larger in size, more profitable and are operationally efficient than non-internet banks. The study shows that implementation of internet banking has resulted in increasing the profitability of the banks but has not increased their risk profile.
5. Dr. Kanagaluru Sai Kumar (2012)[7] has studied the impact of IT on the customer satisfaction of banks. The study based on the sample of 150 respondents revealed that location of branch, service charges charged by banks, internet banking, commercialization and modernization of the banks etc, are the factors influence the satisfaction of customers of the banks.
6. Jasbeer Kaur, Baljit Kaur (2013)[8] studied the e-banking service quality and customer satisfaction in Indian banks operating in Punjab state. Security/privacy, reliability, efficiency, responsiveness and site aesthetic were considered to discover the impact of service quality on customer satisfaction. It was found that the major factors like responsiveness, security/privacy and site aesthetic strongly lead to satisfaction of the customers using online banking services.
7. Dr. B. S. Sawant (2011)[10] explained the technological advancements in Indian banking sector. The study

showed that the Indian banks are excessively deploying IT in their operations. Automated Clearing House (ACH), National Automated Clearing House Association (NACHA), NEFT, EFT, NPCI are the systems which facilitate the electronic clearance of payments and transfer of funds, card transactions (debit card and credit card), CBS, ATM, RTGS, INFINET, BANKNET, SWIFT, Mobile Banking, Demat Cards etc. These technological developments have made the Indian banking sector more efficient, effective, customer centric and competitive.

8. Dr. Sudip Kar Purkayastha (2010)[13] has studied the e-channels deployed by banks and explained how these e-channels are customer centric. The study showed that customers are not giving much preference to these channels and their acceptance to e-channels is low.
9. R. K. Uppal (2011)[15] studied various technological developments in various bank groups in India. The study concluded that the technology is developed in all the bank groups except public sector bank group. ATM, I-banking, M-banking and Tele-banking branches are also more in the new private sector and foreign bank groups. The study also suggested some strategies for the PSBs to face these challenges.
10. Dr. Sunita Bishnoi, Ashima Tandon (2013)[18], conducted a study to know the factors which influence the level of satisfaction of those customers who use internet banking in India. The study revealed that the customers are satisfied with the e-banking services provided by their banks and they like to do the transactions through e-banking in spite some problems being faced by them. The study suggested that the perception of the customers towards e-banking can be changed by acquainting the customers with proper information regarding internet banking, creating awareness about e-banking among the customers, charging lesser fees and taking proper security measures.
11. Mr. A. K. Hirve (2007)[20]studied the Impact of information technology on various areas of banking operations. He made a comprehensive study of the impact of IT on transaction processing in the banks, fund transfer and settlement mechanism, wholesale banking, human resource management in banks, productivity and supervision, organizational effectiveness, bank's cost of operations and revenue.
12. Mr. A. S. Mane, Dr. N. Y. Rajeshirke and Dr. R. D. Kumbhar (2017)[22], studied the effectiveness of ATMs as workload relievers of bank employees. It was found that the ATMs do not help the banks in reducing the workload of their employees after a particular level. Due to the increase in customers coming under bank net, increase in online and offline banking transactions, problems faced by customers in e-banking etc. the workload of bank employees in increasing day by day.
13. Mr. A. S. Mane and Dr. N. Y. Rajeshirke(2017)[23] studied the impact of IT on service quality and satisfaction level of customers. The study revealed that there is a positive relationship between e-banking service quality and customer satisfaction. It is found that the customers of private sector banks are more satisfied as compared to public sector banks with the e-banking service quality.
14. Srinivas Anumala and Bollampally Kishore Kumar Reddy (2007)[25] conducted the study to know and understand the benefits of e-CRM to customers and banking industry in Sweden.The study also indicated that banks have ensured total safety and security for the transactions of their customers with the implementation of e-CRM and the other latest technologies. The study showed that E-CRM has facilitated the banks to provide one to one services and banks have succeeded in maintaining good relations with their customers.
15. Sanjay Dhingra (2011)[33] studied impact of Information Technology on the performance of scheduled commercial banks in India. The study explained the reasons for the difference in the levels of efficiency by comparing the performance of banks on identified success factors. The study also presented success model for PSBs. The results of the study showed that the efficiency of the banks has improved gradually after the implementation of IT.

RESEARCH GAP

The research done by the previous researchers was limited to the use/limitation of IT by the banks in their routine functions. No comprehensive research was done by considering the views of banks managers, employees and customers of three different types of banks such as public sector, private sector and co-operative sector.

Hence, in the present study, the research has been done to identify the impact IT on the performance of banks operating in Pune city. The comparative study on the public sector, private sector and co-operative sector operating in Pune city was not done in the earlier researches. The sample size in the present research is 1950 respondents (1500 bank customers, 300 bank employees and 150 bank managers/officers). Previous research studies have not considered this much vast, wide-ranging and all-inclusive sample size.

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DATA ANALYSIS AND INTERPRETATION

PART I: E-banking and Service Quality

1. The study shows that, 38.81% respondents of the public sector banks, 44.50% of the respondents of the Co-operative Banks and 37.76% customers of Private Sector Banks agreed that their banks provide e-banking /m-banking services more reliably.
2. 11.3% respondents from Bank of India and 7.4% of the respondents from Bank of Maharashtra have responded that e-banking services provided by their banks are not responsive enough. 28.8% respondents of ICIC and 33.1% of the respondents from HDFC bank strongly agree that the services are responsive. It indicates that the Public-Sector Banks are lagging behind as far as responsiveness is concerned.
3. 1.9% of the respondents from the private banks responded that e-banking services provided by their banks are not efficient. Overall, according to the responses given by the respondents, public sector banks are lagging in providing efficient services to their customers.
4. 11.18% respondents from public sector banks, 10.98% respondent from co-operative sector banks and 18.73% respondent from private sector banks are strongly agree that the that their data/ information/ funds are safe.
5. 46.05% respondents from public sector banks, 46.24% respondents from co-operative sector banks and 51.35% respondents from private sector banks are agreed that contacting services of their banks are efficient.

PART II: E-banking and Customer Satisfaction

1. 25% respondents from public sector banks, 21.96% respondents from co-operative banks and 28.70% respondents from private banks are highly satisfied with the availability of the systems.
2. 5.48% respondents of all the banks under study responded that e-banking systems are inaccurate. 56.55% of the respondents of all banks under study responded that the internet banking service provided by their banks is accurate.
3. 25% respondents from public sector banks, 19.65% respondents from co-operative sector banks and 32.32% respondents from private sector banks are highly satisfied with the ease of use of e-banking services.
4. 20.39% respondents from public sector banks, 13.87% respondents from co-operative sector banks and 32.93% respondents from private sector banks are highly satisfied with the convenience of services. 24.7% of the customers from BOM disagreed that the services are convenient.
5. Overall, 10.1% of the customers of Private banks as opposed to 6.2% from public sector banks and 1.9% from cooperative banks are dissatisfied with the cost effectiveness of the services.
6. 15.78% respondents from public sector banks, 20.23% respondents from co-operative sector banks and 20.24% respondents from private sector banks are highly satisfied with the way the banks handle the problems of their customers.
7. The private sector banks seem to be the best performers when it comes to the application of information technology to improve the service quality. 78.53% of ICICI bank and 89.61% from HDFC Bank have either agreed or strongly agreed that IT applications lead to increasing service quality.
8. 86.81% respondents of Public Sector Banks, 90.46% respondents of Co-operative Sector Banks and 93.40% respondents of Private Sector Banks are either satisfied or strongly satisfied with the services provided through IT by their banks.

PART III: E- Customer Relationship Management (e-CRM) by banks

1. The study shows that 22.36% respondents from public sector banks, 21.96% respondents from co-operative banks and 25.07% respondents from private banks are strongly agree that the e-banking services provided by their banks are credible.
2. The study reveals that 19.73% respondents from public sector banks, 16.76% respondents from co-operative banks and 21.14% respondents from private banks are strongly agree that the bank understands them and their needs. This points out that when it comes to understanding the customers, the private banks are far better than the nationalized banks and co-operative banks.
3. The study shows that the services provided by the nationalized banks are least punctual. 46 out of 152 customers of nationalized banks have strongly disagreed that the services are provided in a timely manner and they are informed by the banks about the updations in the information. The study indicates that the private banks are ahead of other types of banks.

PART IV: Additional Questions on E-Banking

1. It is important that the websites that are maintained by banks should be interactive. The study reveals that 28 out of 152 customers of nationalized banks, 38 out of 173 customers from the cooperative banks and 36 out of 336 customers of private sector banks disagree that the websites are interactive. It clearly indicates that Private Sector Banks are far ahead of other two types of banks.
2. The study reveals that 57% respondents of nationalized banks, 64% of the customers of co-operative banks and 85% of the respondents of private banks agreed that the bank applications are interactive. In all, the study shows that the mobile application of the Co-operative banks and the private banks are more interactive as compared to those of Public Sector banks.
3. The study shows that the websites of the private banks and the nationalized banks are more user friendly as compared to those of the Cooperative Banks.
4. The study shows that the logon processes on the websites of Private and Co-operative banks are much smoother than those compared to Public banks.
5. The private sector banks are far ahead as compared to other two types banks so far as bank application's look and advancement is concerned.
6. The customers are not entirely happy with the kind of advanced options that are offered on websites.

DATA ANALYSIS OF BANK MANAGERS/OFFICERS

1. The study reveals that all banks under study reported they have in house IT department which looks after maintenance and updation of their respective bank's website. So, there is no tendency of outsourcing of the maintenance and updation of their website.
2. The study indicates that, all banks have security measures in place to secure their bank's website.
3. The study shows that, all the managers have responded that the security measures are always updated to protect from any fraud.
4. The study shows that the mangers of Bank of Maharashtra, Bank of India & Cosmos Cooperative Bank responded that not more than 25% of their customers use the facility of telephone banking. Managers from ICICI and HDFC bank responded that more than 50% of their customers use Telephone Banking.
5. It can be seen that 60% of the managers of all banks feel that up to 25% of their customers use internet banking. The percentage of customers using internet banking is higher in case of cooperative banks and highest in case of private banks.
6. 52% of the managers from public sector banks and 44% from Cooperative banks responded that up to 25% of their customers use mobile banking. 26% of the Private Bank managers responded that 51-75% of their customers use mobile banking. It indicates that mobile banking is a popular mode of transactions in private sector banks.
7. The study shows that 44% of the managers strongly agree that the overall performance and efficiency of the bank is dependent on the use of Information Technology in their routine operations. 32.67% of the managers responded that they agree to the statement.
8. The study depicts that 88 manager/officers out of 150 managers/officers, agreed that Customer Relationship Management the bank has improved after the implementation of IT. It shows that, IT is playing a pivotal role in managing the relationship with the customers.
9. The study indicates that, overall 96% of the managers/officers are of opinion that the use of IT improves customer satisfaction level.

DATA ANALYSIS OF THE BANK EMPLOYES

1. The study shows that there are various factors that prevent customers from not achieving the tasks through internet. Such as the customer do not use internet due to Security concerns, some people find it complex to use the systems, some people feel that the systems are not only complex but also not secured.
2. The study shows that 65.7% of the respondents from all banks have agreed that risk management is indeed a challenge for the banks.
3. 16% overall disagreed that the customers avoid E-Banking due to privacy concerns. 50.3% of the employees responded that they either agree or strongly agree that customers avoid E-banking due to privacy concerns.
4. The study reveals that 39.3% of the bank employees opined that the customers fear using e-banking because of cyber/electronic crimes.

5. 54% of the employees of nationalized banks, 79% of the employees of co-operative sector banks and 93% of the employees of private sector banks opined that Information Technology improves the satisfaction towards all banking services.
6. Overall 52% of the employees of the all the banks responded that they face the problem sometimes.
7. Overall, the cooperative banks seem to have more hardware and software related issues as compared to the other banks. The same problem seems to be more intense with regards to the cooperative banks and less intense with regards to the private sector banks.

TESTING OF HYPOTHESIS

H1: The overall performance and efficiency of banks from all sectors is largely dependent on the use of Information Technology in their routine operations

For the purpose of testing the above hypothesis, the responses of the managers were considered in the first place. In the questionnaire, it was asked for the managers to rate their opinion on a scale of 5, where 5 meant Strongly agree, 4 was for Agree, 3 was for Neutral, 2 for Disagree and 1 for Strongly Disagree. The following were the responses given by the managers:

The overall performance and efficiency of your bank is dependent on the use of Information Technology in their routine operations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	2.7	2.7	2.7
	Disagree	4	2.7	2.7	5.3
	Neutral	27	18.0	18.0	23.3
	Agree	49	32.7	32.7	56.0
	Strongly Agree	66	44.0	44.0	100.0
	Total	150	100.0	100.0	

Out of 150 managers, it can be seen that 115 managers either agreed or strongly agreed that the overall performance and efficiency of banks from all sectors is largely dependent on the use of Information Technology in their routine operations. To test whether the above is statistically significant, One Sample T test was used. The assumed mean was 4 (As 4 was for agree).

HO: $\mu = 4$

H1: $\mu \neq 4$

Following were the results:

One-Sample Statistics

Particulars	N	Mean	Std. Deviation	Std. Error Mean
The overall performance and efficiency of your bank is dependent on the use of Information Technology in their routine operations	150	4.13	.978	.080

One-Sample Test

Particulars	Test Value = 4					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
The overall performance and efficiency of your bank is dependent on the use of Information Technology in their routine operations	1.586	149	.115	.127	-.03	.28

As far as the One Sample test statistics are concerned, the agreement score was statistically significantly higher by 0.127 (95% CI, -0.3 to 0.28) than the score of 4.0 (For Agree), t(150) = 1.586, p>0.05.
The above table reveals that the calculated mean is4.13, very close to 4. This observation also proves to be statistically significant, as the P value is 0.115, which is >0.05 (at 95% Confidence Level). This means that we cannot reject the null hypothesis that the assumed and actual mean are equal. Thus, the overall performance and efficiency of the bank is dependent on the use of Information Technology in their routine operations, irrespective of which sector the bank belongs to.

H2: Information Technology improves the customer satisfaction of Public Sector, Private Sector and Co-operative Sector Banks.
For the purpose of testing the above hypothesis, the responses of all the consumers, managers and employees were taken. Independent Sample T test was used. 1477 Customers were using at least one service that was being delivered through the electronic medium. 300 Employees & 150 Managers, gave their respective opinions to a statement on a Likert scaling of 5. where 5 meant Strongly agree, 4 was for Agree, 3 was for Neutral, 2 for Disagree and 1 for Strongly Disagree. The following were the responses:

Information Technology improves the satisfaction towards all banking services						
Particulars			Type of respondent			Total
			Customers	Employees	Managers	
Information Technology improves the satisfaction towards all banking services	Strongly Disagree	Count	38	5	3	46
		% of Total	2.0	0.3	0.2	2.4
	Disagree	Count	64	49	3	116
		% of Total	3.3	2.5	0.2	6.0
	Neutral	Count	42	20	0	62
		% of Total	2.2	1.0	0.0	3.2
	Agree	Count	276	56	31	363
		% of Total	14.3	2.9	1.6	18.8
	Strongly Agree	Count	1057	170	113	1340
		% of Total	54.9	8.8	5.9	69.5
Total		Count	1477	300	150	1927
		% of Total	76.6	15.6	7.8	100.0

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One-Sample Statistics

Particulars	N	Mean	Std. Deviation	Std. Error Mean
Information Technology improves the satisfaction towards all banking services	1927	4.47	.981	.022

One-Sample Test

	Test Value = 4.5					
					95% Confidence Interval of the Difference	
Particulars	T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Information Technology improves the satisfaction towards all banking services	-1.289	1926	.197	-.029	-.07	.02

As far as the One Sample test statistics are concerned, the agreement score was statistically lower by 0.029 (95% CI, -0.07 to 0.02) than the score of 4.5 (For Agree/ Strongly Agree), t(1927) = -1.289, p>0.05.
The above table reveals that the calculated mean is 4.47, very close to 4.5 (Which was the assumed mean). The test value or the assumed mean was kept at 4.5 as 4 meant agree and 5 meant Strongly Agree. This observation also proves to be statistically significant, as the P value is 0.981, which is >0.05 (at 95% Confidence Level). This means that we cannot reject the null hypothesis that the assumed and actual mean are equal. Thus, it can be said that Information Technology improves the customer satisfaction of Public Sector, Private Sector and Co-operative Sector Banks.

H3: Customer Relationship Management of Public Sector, Private Sector and Co-operative Sector Banks has improved after the implementation of IT.

For the purpose of testing the above hypothesis, the responses of the managers were considered. The manager's responses were important as they were senior employees of the organization and with their kind of experience were in the best position to express on opinion about the improvement in CRM functions post implementation of IT Applications. In the questionnaire, it was asked for the managers to rate their opinion on a scale of 5, where 1 meant Strongly agree, 2 was for Agree, 3 was for Neutral, 4 for Disagree and 5 for Strongly Disagree. The following were the responses given by the managers:

Customer Relationship Management your bank has improved after the implementation of IT.					
Particulars		Frequency	Percent	Valid Percent	Cumulative Percent
	Strongly Disagree	1	.7	.7	.7
	Disagree	2	1.3	1.3	2.0
	Neutral	8	5.3	5.3	7.3
	Agree	51	34.0	34.0	41.3
	Strongly Agree	88	58.7	58.7	100.0
	Total	150	100.0	100.0	

Out of 150 managers, it can be seen that 88 managers strongly agreed that Customer Relationship Management the bank has improved after the implementation of IT. To test whether the above is statistically significant, One Sample T test was used. The assumed mean was 4.5 (As 4 was for 'agree' and 5 was for 'strongly agree').
HO: $\mu = 4.5$

H1: $\mu \neq 4.5$
Following were the results:

One-Sample Statistics

Particulars	N	Mean	Std. Deviation	Std. Error Mean
Customer Relationship Management your bank has improved after the implementation of IT.	150	4.49	.721	.059

One-Sample Test						
	Test Value = 4.5					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Customer Relationship Management your bank has improved after the implementation of IT.	-0.120	149	0.905	-0.00667	-0.1169	0.1035

As far as the One Sample test statistics are concerned, the agreement score was statistically lower by 0.00667 (95% CI, -0.11 to 0.10) than the score of 4.5 (For Agree/ Strongly Agree), t(150) = -0.120, p>0.05. It can be seen that T value is close to zero. Also, zero lies very much between the lower and upper difference at 95% confidence level. This observation also proves to be statistically significant, as the P value is 0.905 (close to one), which is >0.05 (at 95% Confidence Level). This means that we cannot reject the null hypothesis that the assumed and actual mean are equal. Thus, we may conclude that Customer Relationship Management the bank has improved after the implementation of IT.

H4. Information Technology improves the service quality of Public Sector, Private Sector and Co-operative Sector Banks.

One-Sample Statistics- For Public Sector, Private Sector and Co-operative Sector Banks

Particulars	N	Mean	Std. Deviation	Std. Error Mean
Do you agree that Information Technology applications used by your bank have led to an improvement in the service quality?	656	3.92	1.107	.043

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One-Sample Test- for Public Sector, Private Sector and Co-operative Sector Banks

Particulars	Test Value = 4					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Do you agree that Information Technology applications used by your bank have led to an improvement in the service quality?	-1.764	655	.078	-.076	-.16	.01

As far as the One Sample test statistics are concerned, the agreement score was statistically lower by 0.076 (95% CI, -0.16 to 0.01) than the score of 4.0 (For Agree), $t(656) = -1.764$, $p>0.05$.
For the purpose of testing this hypothesis, while the earlier tests and independent sample t-test was chosen. Here, the assumed mean was 4 which was for "agree". The above table shows a very favourable P value of 0.078 which is greater than 0.05 and thus hypothesis can be safely accepted. This means that the assumed mean is not statistically different from the actual mean. It can also be concluded that information technology does indeed improve the service quality of the public sector, private sector and co-operative sector Banks.

CONCLUSION

1. A majority of the people who visit banks are between the age of 18 to 50 years. Education-wise they are mostly graduates or post graduates. Most of the employees in the banks belong to the same age group and have similar educational qualifications. The customers are mostly salaried employees who have limited banking demands. Their major transactions with the bank involve deposit and withdrawal of salaries and payment of utility bills and EMIs through ECS. These customers mostly have savings accounts.
2. It overall conclusion, it can be said that the private banks lag behind in several aspects as compared to the nationalized and cooperative banks and there is a lot of improvement required in several areas. One cannot clearly distinguish the nationalized banks as the best performers or the cooperative banks is the best performers because there are issues that need to be taken care of in nationalized and cooperative banks also. What the study would conclude is that, for a bank to be successful there should be a proper commitment of the top-level management and at the same time the IT staff who takes care of the hardware and software infrastructure within the bank must work in harmony with the banking staff. It cannot be said that the IT staff is more important than the banking staff and vice versa. For a bank to be successful it is essential that they all work as a team and perform the roles efficiently with full cooperation with each other.
3. On testing the hypothesis; the study finally concludes that:
    a. The overall performance and efficiency of banks from all sectors is largely dependent on the use of Information Technology in their routine operations.
    b. Information Technology improves the customer satisfaction of Public Sector, Private Sector and Co-operative Sector Banks.
    c. Customer Relationship Management of Public Sector, Private Sector and Co-operative Sector Banks has improved after the implementation of IT.
    d. Information Technology improves the service quality of Public Sector, Private Sector and Co-operative Sector Banks.

    Public Sector and Private Sector Banks are using more customer friendly and advanced technology in their operations as compared to the Co-operative banks in Pune city.

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SUGGESTIONS

Suggestions to the Public Sector Banks

1. **Training the employees:** Employees should be trained in order to adopt latest technology instead of teaming up and revolting against major proposed changes.
2. **Understanding the needs of the consumers in a better way:** The top level, middle level and the lower level managers of the nationalized banks need to use the customer centric approach to service delivery. This will not only change the way the services are offered to the consumers, but will also generate loyalty and trust amongst the existing customers.
3. **Outdated technology** is a problem that needs to be dealt with in an innovative way by the nationalized banks. Many times employees of the nationalized banks with the customers are seen hung-up, just because "the server is down".
4. Several IT staff members complain about issues in taking backups. The researcher suggests that the IT staff members should continuously involve in research and development and testing of various backup methods to make their job easier.
5. Like any other business, banks also operate under tremendous financial constraints due to which upgrades are not always possible. Hardware and software both are known to have a certain level of compatibility. Upward and downward compatibility must be studied carefully while purchasing and installing software and hardware infrastructure. With upward compatibility the hardware will be able to support next level of software.
6. To combat cyber-attacks, the banks in India need to have an enterprise-grade security operations center. Not all banks have such facilities.
7. The regulators must have independent cyber security penetration testing and it should be made mandatory. Hackers will continue to upgrade their own ability to hack but the banks are also not fall behind and create security systems that are almost impossible to breach.

Suggestions to the Co-operative Banks & Private Sector Banks

1. Banks should primarily aim at making their E-banking websites and M-Banking applications more user-friendly by:
    a. Better optimizing institution websites for mobile browsers and devices with smaller screens, so as to fit only the most important and relevant information in the small screens on cell phones and other devices.
    b. Eliminating unwanted animations on the banks welcome screen, which end up only annoying the average customer.
    c. **Enhanced alerts that work fast:** At times, due to the lack of up-to-date IT infrastructure, the banks cannot intimate the customers about the happening of a transaction as it happens in real time. Depending upon the traffic on the servers, there is always a lag in receiving the one-time password or an alert on the cell phones or email accounts of the customers.
    d. **Seamless Integration of services:** A mobile banking application should be capable of integrating as many end-user offerings as possible, from e-statements to check imaging to cash management to mobile banking- in a seamless manner.
2. **Affordable pricing:** The current pricing strategy is not totally unaffordable as the current study suggests. Yet, pricing is one important aspect that must be considered by all the banks when it comes to offering technology oriented services.
3. **Timeliness in Services:** By upgrading the IT infrastructure, the services must be made more accessible and faster and should be capable of handling and processing larger number of requests at a particular point in time.
4. **Effective problem handling:** The customers should be given solution to their issues in a reasonable time. For example, if a particular customer has transferred some funds to another party, it may happen that due to some system error, the money does not get transferred. Such problems must be resolved immediately or the entire objective of banking gets lost.
5. The top-level management must allow the IT staff members to be innovative and let them participate in deciding the different training programs that would increase the overall efficiency of the IT staff members and also reduce the resistance to such training programs.

6. Like any other business, banks also operate under tremendous financial constraints due to which upgrades are not always possible. Hardware and software both are known to have a certain level of compatibility. Upward and downward compatibility must be studied carefully while purchasing and installing software and hardware infrastructure. With upward compatibility the hardware will be able to support next level of software.
7. The private banks seem to be lagging behind in several aspects as compared to the nationalized and cooperative banks. The data analysis chapter and the findings chapter of this particular thesis needs to be accessed and read to understand the various dimensions of service quality and the opinion of the employees, the customers and the managers. This thesis would offer them a multidimensional understanding of the various issues and help them correct critical problems.
8. Hardware upgrades or software upgrades should be done periodically.
9. The banks must appoint experts carefully and must also include hackers to ethically identify loopholes in the systems and nullify them before the catastrophe happens.

REFERENCES

1. *Guariglia, A., &Poncet, S. (2008). Could financial distortions be no impediment to economic growth after all? Evidence from China. Journal of Comparative Economics, 36(4), 633-657.*
2. *Mishra, S. (2012). Banking Law and Practice. New Delhi: S. Chand and Co. Ltd.*
3. *Guruswami, S. (2010). Banking Theory, Law and Practice. New Delhi: Tata McGraw Hill Education Pvt. Ltd.*
4. *Soukal, I., & Hedvicaková, M. (2011). Retail core banking services e-banking client cluster identification. Procedia computer science, 3, 1205-1210.*
5. *Mohan, T. R. (2008). Reforming the Banking Sector. Economic and Political Weekly, 28-31.*
6. *Rajesh, R., Sivagnanasithi, T. (2009). Banking Law and Practice. New Delhi: Tata McGraw Hill Education Pvt. Ltd.*
7. *Das, A., & Ghosh, S. (2006). Financial deregulation and efficiency: An empirical analysis of Indian banks during the post reform period. Review of Financial Economics, 15(3), 193-221.*
8. *Sensarma, R. (2005). Cost and profit efficiency of Indian banks during 1986-2003: a stochastic frontier analysis. Economic and Political Weekly, 1198-1209.*
9. *Deolakar,G.H (1999), ―The Indian Banking Sector on the road of Progress‖, in (ed) Rising to the Challenge in Asia: A study of Financial Markets – India, Manila, pp.59-109.*
10. *Buckland, M. K. (1991). Information as thing. Journal of the American Society for information science, 42(5), 351-360.*
11. *Card, S. K. (2017). The psychology of human-computer interaction. CRC Press.*
12. *Cork, W. H., Weber, M., Ceckowski, D., & Morrow, D. (2001). U.S. Patent No. 6,256,643. Washington, DC: U.S. Patent and Trademark Office.*
13. *Raj, K., &Aithal, P. S. (2018). Digitization of India-Impact on the BOP Sector.*
14. *Panneerselvam, R. (2004). Research Methodology: A Guide for Researchers in Management and Social Sciences.New Delhi: PHI Learning Pvt. Ltd.*
15. *Taylor, B., Sinha, G., & Ghoshal, T. (2006). Research Methodology: A Guide for Researchers in Management and Social Sciences. New Delhi: PHI Learning Pvt. Ltd.*
16. *Agarwal, B. L. (2015). Basic Statistics. (6th ed.). New Delhi: New Age International Publications.*
17. *Singh, H. K., &Tigga, A. E. (2012, March). Impact of information technology on Indian banking services. In Recent Advances in Information Technology (RAIT), 2012 1st International Conference on (pp. 662-665). IEEE.*
18. *Tater, B., Tanwar, M., &Bothra, N. (2011). Impact of information technology on banking industry. International Journal of Business Economics and Management Research, 2(1), 85-94.*
19. *Sharma, A., & Sharma, M. C. Emerging Issues in Banking and Financial Sector in India.*
20. *Chakrapani, Amit. "Financial Reporting and its impact on Growth and Performance of Indian Manufacturing SME's."*
21. *Malhotra, P., & Singh, B. (2009). The impact of internet banking on bank performance and risk: The Indian experience. Eurasian Journal of Business and Economics, 2(4), 43-62.*
22. *Sharma, D. (2012). Does Technology Lead to Better Financial Performance? A Study of Indian Commercial Banks. Managing Global Transitions: International Research Journal, 10(1).*
23. *Kumar, K. S. (2012). Job stress in private banks: a study with respect to causes and consequences. South Asian Journal of Marketing & Management Research, 2(4), 234-247.z*
24. *Kaur, J., & Kaur, B. (2013). Determining Internet Banking Service Quality & Customer Satisfaction in India. In Tenth AIMS International Conference on Management (pp. 2670-2679).*
25. *Kaur, R. (2013). The Impact of Electronic Banking on Banking Transactions: A Cost-Benefit Analysis. IUP Journal of Bank Management, 12(2), 62.*
26. *Sawant, B. S. (2011). Technological developments in Indian banking sector. Indian Streams Research Journal, 1, 1-4.*
27. *Dangwal, R., Kailash, S., & Swati, A. (2010). Technological advancements in the Banking industry of Dehradun district. International Journal of Commerce and Business Managaement, 3(1), 70-73.*

28. *Jyoti Kumar Pandey (2010) Technology Trends in the Banking Industry, College of Agricultural Banking Reserve Bank of India, Pune, Journal on banking and commerce, 6(2), 60-64.*
29. *Purkayastha, S. K. (2010). Technology Driven Channels: Need to be More Customer Centric. Journal: The Indian Banker, 5(5).*
30. *Seranmadevi, R., &Saravanaraj, M. G. (2012). Technology@ Indian banking sector. European Journal of Social Sciences, 29(4), 472-488.*
31. *Uppal, R. K. (2008). Customer perception of e-banking services of Indian Banks: Some Survey Evidence. The IUP Journal of Bank Management, 7(1), 63-78.*
32. *Modi, A. G., & Patel, K. J. (2012). Effect of internet based banking services on service quality of Indian banks: An empirical investigation. Asian Journal of Research in Banking and Finance, 2(9), 41-58.*
33. *Uppal, R. K., &Juneja, A. (2012). Kisan Credit Card Scheme in India-Isuues and Progress. Asian Journal of Research in Social Sciences and Humanities, 2(6), 29-47.*
34. *Bishnoi, S., & Tandon, A. (2013). Customer satisfaction towards internet banking: Comparative survey evidences. ACADEMICIA: An International Multidisciplinary Research Journal, 3(4), 89-106.*
35. *Vinayagamoorthy, A., Sankar, C., & Sangeetha, M. (2012). Mobile banking–an analysis. Asian Journal of Research in Banking and Finance, 2(7), 76-86.*
36. *Hirve, A. K. (2007). IT Impact on Banking. IT Channel, College of Agricultural Banking Bulletin, September, RBI, Pune.*
37. *Ahmed, T. (2011). Impact of IT on Banking Accounting System; A Case Study of State Bank of India (Rajasthan). International Journal of Business and Social Science, 2 (17). pp 150 -157.*
38. *Mane, A. S., Rajeshirke, N. Y., &Kumbhar, R. D. (2017). Measuring effectiveness of ATMs as workload relievers: A study with reference to co-oeprative and private sector banks in Pune city. Journal of Commerce and Management Thought, 8 (1), 151-160.*
39. *Mane, A. S. & Rajeshirke, N. Y. (2017). The impact of internet on service quality and customer satisfaction: A comparative study of public sector and private sector banks in Pune city. Asian Journal of Research in Banking and Finance, 7 (6), 32.50*
40. *Wang, C., & Wang, Z. (2006). The impact of internet on service quality in the banking sector.*
41. *Anumala, S., Reddy, K., & Kishore, B. (2007). Benefits of e-CRM for Banks and their Customers: Case studies of two Swedish banks.*
42. *Ahmed, Tanveer. "Electronic customer relationship management in online banking." (2009).*
43. *KPMG (2010) banking on technology in India. The Ecnomic Times banking technology conclave 2010.*
44. *KPMG (2011).Technology Enabled Transformation in Banking.The Economic Times Banking Technology Conclave.*
45. *IDRBT and Ernst and Young, (2011).Technology in Banking – Insight and Foresight.Retrieved from http://www.idrbt.ac.in/assets/publications/BT%20Awards%20Review/Technology%20in%20Banking%20(2011).pdf.*
46. *Infosys Finacle. (2012). Banking in India: Evolution in Technology. Retrieved from https://www.edgeverve.com/wp-content/banking-in-India-evolution-in-technology.pdf/*
47. *Malik A. K. (2008), "Socio-Economic Impact of Information and Communication Technology: A Study of Indian Banking Sector", Jawaharlal Nehru University, Delhi.*
48. *Jadhav Rajani, "Problems and Prospects of Bank Computerization – A Study of Selected Co-operative Banks in Pune", Indian Institute of Cost and Management Studies (IndSearch), Pune.*
49. *Dhingra Sanjay (2011), "A Study of the impact of Information Technology on the performance of Scheduled Commercial Banks in India", University School of Management Studies, Guru Govindsingh Indraprastha University, Delhi.*
50. *Kaushal Robin (2012), "Impact of E-Banking on Operational Performance and Service Quality of Banking Sector in India", Punjabi University.*
51. *Kaur, H., & Singh, K. N. (2015). Pradhan Mantri Jan Dhan Yojana (PMJDY): a leap towards financial inclusion in India. International Journal of Emerging Research in Management &Technology, 4(1), 25-29.*
52. *Lang, B., & Colgate, M. (2003). Relationship quality, on-line banking and the information technology gap. International journal of bank marketing, 21(1), 29-37.*
53. *McNurlin, B. C., & Sprague, R. H. (2001). Information systems management in practice. Prentice Hall PTR.*
54. *Jasperson, J. S., Carte, T. A., Saunders, C. S., Butler, B. S., Croes, H. J., & Zheng, W. (2002). Power and information technology research: A metatriangulation review. MIS quarterly, 26(4), 397-459.*
55. *Bodla, B. S., & Verma, R. (2006). Determinants of profitability of banks in India: A multivariate analysis. Journal of Services Research, 6(2), 75-89.*
56. *Gulati, V. P., Sivakumaran, M. V., &Manogna, C. (2002). IT framework for the Indian Banking Sector. ASCI Journal of Management, 31(1), 67-77.*
57. *Kannabiran, G., & Narayan, P. C. (2005). Deploying Internet Banking and e-Commerce—case study of a private-sector bank in India. Information Technology for Development, 11(4), 363-379.*
58. *Jutla, S., & Sundararajan, N. (2016). India's FinTech Ecosystem. The FinTech Book: The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries, 56-57.*
59. *Gauba, R. (2012). The Indian banking industry: Evolution, transformation & the road ahead. Pacific Business Review International, 5(1), 85-97.*

60. *Kishor, N. Ratna, and KumbaNagamani. "Customer relationship management in Indian banking sector." ACADEMICIA: An International Multidisciplinary Research Journal 5, no. 6 (2015): 134-142.*
61. *Dutta, K., & Dutta, A. (2009). Customer Expectations and Perceptions across the Indian Banking Industry and the Resultant Financial Implications. Journal of Services Research, 9(1).*
62. *Demetriades, P. O., &Luintel, K. B. (1996). Financial development, economic growth and banking sector controls: evidence from India. The Economic Journal, 359-374.*
63. *Singhal, S., McGreal, S., & Berry, J. (2013). Application of a hierarchical model for city competitiveness in cities of India. Cities, 31, 114-122.*
64. *Nalavade, S. (2000). Changing geography of Pune urban area. Journal of Ecological Society, 13(14), 2-3.*
65. *Gokhale, B. G. (1988). Poona in the eighteenth century: An urban history (pp. 50-132). New Delhi: Oxford University Press.*
66. *Yadav, P., & Deshpande, S. (2015). Spatio-Temporal assessment of urban growth impact in Pune city using remotely sensed data. In 36th Asian Conference on Remote Sensing.*
67. *Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. Advances in health sciences education, 15(5), 625-632.*

WEBSITES

1. *www.rbi.org*
2. *www.cab.org.in*
3. *www.iba.org.in*
4. *www.bankofmaharashtra.in*
5. *www.bankofindia.com*
6. *www.icicibank.com*
7. *www.hdfcbank.com*
8. *www.cosmosbank.com*
9. *www.saraswatbank.com*
10. *www.data.worldbank.org*
11. *www.ibef.org*
12. *https://en.wikipedia.org/wiki/Pune*
13. *https://en.wikipedia.org/wiki/HDFC_Bank*
14. *https://en.wikipedia.org/wiki/ICICI_Bank*
15. *https://en.wikipedia.org/wiki/Bank_of_Maharashtra*
16. *https://en.wikipedia.org/wiki/Bank_of_India*
17. *https://en.wikipedia.org/wiki/Saraswat_Bank*
18. *https://en.wikipedia.org/wiki/Cosmos_Bank*
19. *censusindia.gov.in*
20. ***https://www.surveysystem.com/sscalc.htm***